

WHAT IS CLAIMED IS:

1. A centralizer adapted for concentric mounting on a sub, the sub having a shoulder formed on the outside diameter thereof, comprising:

a collar;

a groove in the inside surface of said collar adapted for receiving the shoulder formed on the outside diameter of the sub therein when concentrically mounted to the sub to limit longitudinal movement of said collar along the sub;

said collar having a portion of reduced outside diameter; and

a plurality of bow springs, one end of each of said bow springs being mounted to said reduced diameter portion of said collar, each of said bow springs being movable between a first, bowed position standing off from the sub to a second compressed position closer to the sub.

2. The centralizer of claim 1 additionally comprising a second collar, said second collar having a reduced diameter portion to which the second end of each of said bow springs is mounted.

3. The centralizer of claim 2 additionally comprising a plurality of notches formed in said reduced diameter portions of said collars, the ends of each of said bow springs being mounted in the corresponding notches of said collars.

4. The centralizer of claim 2 wherein the width of the grooves in said collars is sized to limit longitudinal movement of said collars along the sub in a direction apart from each other.

5. The centralizer of claim 1 additionally comprising a plurality of notches formed in said reduced diameter portion of said collar, the end of each of said bow springs being mounted in a corresponding one of said notches.

6. The centralizer of claim 4 wherein the margins of each of said notches are beveled for receiving a complimentary bevel in the end of each of said bow springs.

7. The centralizer of claim 1 additionally comprising a plurality of notches formed in the reduced diameter portion of said collar, the ends of each of said bow springs being mounted in the corresponding notches of said collar.

8. An apparatus for centralizing a tubular member comprising:
  - a tubular member;
  - a collar mounted concentrically on said tubular member;
  - a shoulder formed on said tubular member;
  - a groove formed in said collar for receiving the shoulder on said tubular member;
  - a plurality of bow springs, one end of each of said bow springs being mounted to said collar, each of said bow springs being compressible from a first, bowed position standing off from said tubular member to a second compressed position closer to said tubular member.
9. The apparatus of claim 8 wherein said collar is provided with a reduced diameter portion to which the ends of each of said bow springs are mounted.
10. The apparatus of claim 9 wherein said collar is provided with a plurality of notches formed in the reduced diameter portion thereof, the ends of each of said bow springs being mounted in the corresponding notches of said collar.
11. The apparatus of claim 8 wherein said collar is provided with a plurality of notches, the ends of each of said bow springs being mounted in the corresponding notches of said collar.
12. The apparatus of claim 8 additionally comprising a second collar concentrically mounted to said tubular member and having the second end of each of said bow springs mounted thereto.
13. The apparatus of claim 12 wherein said tubular member is provided with a shoulder received within an annular groove formed in said second collar.
14. The apparatus of claim 13 wherein the spacing of the shoulders formed on said tubular member is such that the shoulders limit longitudinal movement of said collars along the length of said tubular member.
15. An apparatus for centralizing a tubular member comprising:
  - a tubular member having spaced apart annular shoulders formed thereon;
  - first and second collars mounted concentrically on said tubular member;

a groove formed in said collars for receiving the respective shoulders on said tubular member to limit movement of said collars along the length of said tubular member;

a plurality of bow springs, one end of each of said bow springs being mounted to each of said collars, each of said bow springs being compressible from a first, bowed position standing off from said tubular member to a second compressed position closer to said tubular member.

16. The apparatus of claim 15 wherein said collars are provided with reduced diameter portions to which the ends of each of said bow springs are mounted.

17. The apparatus of claim 16 wherein said collars are provided with a plurality of notches formed in the reduced diameter portions thereof, the ends of each of said bow springs being mounted in the corresponding notches of said collars.

18. The apparatus of claim 15 wherein said collars are provided with a plurality of notches, the ends of each of said bow springs being mounted in the corresponding notches of said collars.